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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,805	11/20/2003	Lorenzo Parrini	132702-0098	8662
43935 7590 09/13/2007 FRASER CLEMENS MARTIN & MILLER LLC 28366 KENSINGTON LANE PERRYSBURG, OH 43551			EXAMINER KRUER, STEFAN	
			ART UNIT 3654	PAPER NUMBER
			NOTIFICATION DATE 09/13/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

Application No.

10/717,805

Applicant(s)

PARRINI, LORENZO

Examiner

Stefan Kruer

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3654

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1 - 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☒ Other: U.S. Copyright Data Sheet (1)

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

**Claims 5, 10 and 15** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The arrangement and distribution of a reinforcing material in a base material, wherein said reinforcing material is in the form of at least one of spheres, grains, capsules, discs and plates, whereby the modulus of elasticity of a fiber containing said reinforcing materials is increased in a longitudinal direction of said fiber is called into question.

The disclosure of the instant invention reviews a random as well as parallel distribution of reinforcing material, wherein the modifiers random and parallel refer to the orientation of the reinforcing material.

As addressed in the prior art of reference of the previous office actions and as newly cited within this office action, the use of randomly orientated (psuedoisotropic) reinforcing material provides the least strength, in comparison to unidirectional (parallel) and bidirectional orientation.

Consequently, a reinforcing material comprising either spheres, grains, capsules, discs or plates, wherein said material has a higher stiffness than the base material, would result in localized concentration of stresses that would compromise the longitudinal elasticity of the base material, rendering the base material less resilient to loading.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 8 and 14** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claims 8 and 14** recite the limitation "... said second phase reinforcing material increases a modulus of elasticity of said fibers in a radial direction of said fibers", whereby the respective independent claim from which the aforementioned claims depend recite "...increases modulus of elasticity of the strands in a longitudinal direction of said fibers..." Therefore, it is unclear whether the depending limitation is to replace the independent limitation or it is to be in addition to the independent limitation, e.g. "... said second phase reinforcing material increases a modulus of elasticity of said fibers in both a radial direction and a longitudinal direction of said fibers"

For purpose of prosecution, the former (e.g. radial direction only) will be applied.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1 – 7, 9 - 13 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over De Angelis (5,566,786) in view of Olesen et al (4,956,039).

**In Claims 1, 3, 4, 6 – 7 and 9**, De Angelis discloses an elongated load-bearing support device (1) with load bearing strands (4), each having a plurality of fibers (5) of a base material in a first phase (aramid fibers (Col. 2, Line 38)) and the strands being surrounded by a sheath (7). The reinforcing material of De Angelis is of a second

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phase, yet it is externally applied to the base material as "... an impregnating medium, for example polyurethane solution..." (Col.3, Line 57) whereby the bending fatigue strength of the strands is increased.

Attention is directed to Olesen et al, as cited for reference in previous office actions, who disclose the application of a thermoplastic sleeve that "...is preferably filled with reinforcement elements having a high modulus of elasticity..." (Col. 2, Line 60), as well as a core string comprising a thermoplastic material with filaments of "...preferably E-glass... S-glass... aramid or carbon...", whereby the distribution of reinforcing material of one phase within a base material of another (second) phase is taught. Furthermore, since the objective of the Olesen et al reference was "...to provide a method or an apparatus for the economical manufacture of a cable-like synthetic composite body which satisfies the requirements of being able to bear relatively high tensile and compressive forces in every respect...", it would have been obvious to one of ordinary skill in the art to modify the base material of De Angelis with the teaching of Olesen et al, in order to gain the commercial and structural (performance) features.

**In Claim 2**, De Angelis discloses his strands having a plurality of fibers (5) formed into a cable (4 and, in total, 1).

**In Claims 5 and 10**, as noted above, Olesen et al disclose a reinforcing material as "... staple fibers (23) of a high modulus of elasticity..." which is used to fill the base material (13) of thermoplastic material.

**Regarding Claims 11 – 13 and 15**, the devices of Claims 1 - 6 would necessarily have to be formed in order to function. It would have been obvious to perform all the method steps of claims 1 - 6 when producing the device of De Angelis as modified by Olesen et al above, in a usual and expected fashion, in as much as the method claims recite no limiting steps beyond producing each of the components.

**In Claim 11**, De Angelis, discloses an elongated load-bearing support device (1) with fibers (5) from a base material in a first phase (aramid fibers) and a reinforcing

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material in a second phase ("... an impregnating medium, ...polyurethane solution), with the load-bearing strands (4) thereof being surrounded by a sheath (7).

Olesen et al, however, teach a thermoplastic material that can be "...polypropylene filled with 20% E-glass staple fibers... (Col. 7, Line 7) whereby the glass fibers significantly increase the modulus of elasticity of each of the fibers in the longitudinal direction. Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of De Angelis with the teaching of Olesen et al, in order to provide a base material of superior tensile strength.

**In Claim 12**, De Angelis and discloses a base material selected from aramid.

**In Claim 13**, De Angelis discloses a reinforcing means by impregnation with a polyurethane solution to increase the bending fatigue strength of the base material, whereas Oleson et al teach a reinforcing material as "... E-glass staple fibers ..." as "... having a high modulus of elasticity...".

**In Claim 15**, Olesen et al teach "reinforcement elements... in particular staple fibers..." (Col. 2, Line 61) and that the staple fibers be of "... glass, aramid or carbon..." (Col. 4, Line 5), whereby staple fibers are understood to be short fibers.

**Claims 8 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over De Angelis in view of LaNieve et al (5,437,899).

De Angelis discloses an elongated load-bearing support device (1) with load bearing strands (4), each having a plurality of fibers (5) of a base material in a first phase (aramid fibers (Col. 2, Line 38)) and the strands being surrounded by a sheath (7). The reinforcing material of De Angelis is of a second phase, yet it is externally applied to the base material as "... an impregnating medium, for example polyurethane solution, for the protection of the fibers 5" to increase the bending strength.

Attention is directed to LaNieve et al, as cited for reference in previous office actions, who teach, "... polymers have been mixed with particulate matter and made into fibers..." (Col. 1, Line 54), whereby the particulate matter of their invention being "...an elemental metal or metal alloy, or may be nonmetallic..." (Col. 6, Line 14),

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whereby their polymer is an aromatic polyamide known as aramid. La Nieve et al teach further that such addition of particulate matter will enhance the flexural strength (modulus of elasticity in shear) of the fiber.

It would have been obvious to one of ordinary skill in the art to modify the base material of De Angelis with the teaching of LaNieve et al, in order to gain the features of materials of high flexural strength for applications whereby the material is to maintain a load while experiencing frequent/continuous radial deflection, for safety and durability

### ***Response to Arguments***

Applicant's arguments filed 18 August 2007 with respect to Claims 1, 7 and 11 have been fully considered but they are not persuasive.

The rejections of the previous office action were in response to the claim language. Applicant's arguments are based on the amended claim language applied to the prior art of reference; consequently, this office action comprises a detailed response to Applicant's arguments.

Nevertheless, as noted above and reviewed in the previous office action, La Nieve et al teach the enhancement of his shear strength at a minimized cost to their tensile strength, thereby increasing a modulus of elasticity of his strands in a radial direction – thereby meeting the claim language.

As an additional comment with respect to the rejections 35 U.S.C. 112, first paragraph of Claims 5, 10 and 15, attention is directed to La Nieve et al (Col. 6, Lines 34 – 44), in which the use of platelets and needles as reinforcing material are addressed with the cautionary statement that the "... particles should be small enough that the fiber (base material, sic) tensile properties do not appreciably deteriorate..."

With respect to the publication date of Mott, a copyright date of 2002 is acknowledged. The publication date was obtained from the U.S. Copyright database is 25 June 2001, a print out of which is enclosed for reference.

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### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Schwartz (*Composite Materials Handbook*, 2nd Ed.) and University of Plymouth are cited for an overview of composite structures addressing the impact of the amount, type, structure and orientation of reinforcing materials on both strength and modulus of elasticity.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Kruer whose telephone number is 571.272.5913. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Cuomo can be reached on 571.272.6856. The fax phone number for the organization where this application or proceeding is assigned is 571.273.8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866.217.9197 (toll-free).

SHK

26 August 2007

  
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